

WHAT IS CLAIMED IS:

1 A surface acoustic wave device comprising:

an input signal electrode and an output signal electrode
to and from which an electric signal is inputted or outputted;

5 a first surface acoustic wave resonator including:

an input terminal connected to the input signal
electrode and having a plurality of comb electrodes;

an output terminal connected to the output signal
electrode and having a plurality of comb electrodes; and

10 common conductor means which has a plurality of comb
electrodes and a part of comb electrodes of which form an
interdigital transducer together with the comb electrodes of
the input terminal, and the other part of the comb electrodes
of which form an interdigital transducer together with the comb
15 electrodes of the output terminal; and

a second surface acoustic wave resonator connected
between a grounding electrode and at least one of the common
terminals of the first surface acoustic wave resonator.

20 2. The surface acoustic wave device according to claim
1, wherein said common conductor means includes a plurality of
common terminals, each having a plurality of comb electrodes,
and a third interdigital transducer is formed by a part of the
comb electrodes of one common terminal and a part of the comb
25 electrodes of another common terminal.

3. The surface acoustic wave device according to claim
1, wherein the electrode period of the interdigital transducer
forming the second surface acoustic wave resonator is set to
be greater than the electrode period of the plurality of
5 interdigital transducers forming the first surface acoustic
wave resonator.

4. The surface acoustic wave device according to claim
1, wherein an inductance element is connected between the second
10 surface acoustic wave resonator and the grounding electrode.

5. A surface acoustic wave device comprising:
an input signal electrode and an output signal electrode
to and from which an electric signal is inputted or outputted;
15 a first surface acoustic wave resonator connected between
the input signal electrode and the output signal electrode; and
a second surface acoustic wave resonator including:
a plurality of signal-side terminals having a
plurality of comb electrodes and connected to a midpoint between
20 the input signal electrode and the first surface acoustic wave
resonator and a midpoint between the output signal electrode
and the first surface acoustic wave resonator, and
a ground-side common terminal having a plurality
of comb electrodes to form interdigital transducers in
25 cooperate with the comb electrodes of the plurality of

signal-side common terminals and connected to a grounding electrode.

6. The surface acoustic wave device according to claim
5 5, wherein the electrode period of the plurality of interdigital transducers forming the second surface acoustic wave resonator is set to be greater than the electrode period of the plurality of interdigital transducers forming the first surface acoustic wave resonator.

10

7. The surface acoustic wave device according to claim 5, wherein an inductance element is connected between the ground-side common terminal of the second surface acoustic wave resonator and the grounding electrode.

15

8. A surface acoustic wave device comprising:
an input signal electrode and an output signal electrode to and from which an electric signal is inputted or outputted;
a plurality of first surface acoustic wave resonators connected in series between the input signal electrode and the output signal electrode; and

a second surface acoustic wave resonator including:
a plurality of signal-side terminals having a plurality of comb electrodes and connected to a midpoint between the input signal electrode and the first surface acoustic wave

resonator, a midpoint between the output signal electrode and the first surface acoustic wave resonator, and a midpoint between adjacent ones of the first surface acoustic wave resonators, and

5 a ground-side common terminal having a plurality of comb electrodes to form interdigital transducers in cooperation with the comb electrodes of the plurality of signal-side common terminals and connected to a grounding electrode.

10

9. The surface acoustic wave device according to claim 8, wherein the electrode period of the plurality of interdigital transducers forming the second surface acoustic wave resonator is set to be greater than the electrode period of the plurality 15 of interdigital transducers forming the first surface acoustic wave resonator.

10. The surface acoustic wave device according to claim 8, wherein an inductance element is connected between the 20 ground-side common terminal of the second surface acoustic wave resonator and the grounding electrode.

11. A branching filter comprising:
at least two surface acoustic wave devices having
25 mutually different band center frequencies are mounted, and at

least one of the surface acoustic wave devices comprising:
an input signal electrode and an output signal electrode
to and from which an electric signal is inputted or outputted;
a first surface acoustic wave resonator including:
5 an input terminal connected to the input signal
electrode and having a plurality of comb electrodes;
 an output terminal connected to the output signal
electrode and having a plurality of comb electrodes; and
 common conductor means which has a plurality of comb
10 electrodes and a part of comb electrodes of which form an
interdigital transducer together with the comb electrodes of
the input terminal, and the other part of the comb electrodes
of which form an interdigital transducer together with the comb
electrodes of the output terminal; and
15 a second surface acoustic wave resonator connected
between a grounding electrode and at least one of the common
terminals of the first surface acoustic wave resonator.

12. A branching filter comprising:
20 at least two surface acoustic wave devices having
mutually different band center frequencies are mounted, and at
least one of the surface acoustic wave devices comprising:
 an input signal electrode and an output signal electrode
to and from which an electric signal is inputted or outputted;
25 a first surface acoustic wave resonator connected between

the input signal electrode and the output signal electrode; and

a second surface acoustic wave resonator including:

a plurality of signal-side terminals having a plurality of comb electrodes and connected to a midpoint between

5 the input signal electrode and the third surface acoustic wave resonator and a midpoint between the output signal electrode and the third surface acoustic wave resonator, and

a ground-side common terminal having a plurality of comb electrodes to form interdigital transducers by the comb

10 electrodes and the comb electrodes of the plurality of signal-side common terminals and connected to a grounding electrode.

13. A branching filter comprising:

15 at least two surface acoustic wave devices having mutually different band center frequencies are mounted, and at least one of the surface acoustic wave devices comprising:

an input signal electrode and an output signal electrode to and from which an electric signal is inputted or outputted;

20 a plurality of first surface acoustic wave resonators connected in series between the input signal electrode and the output signal electrode; and

a second surface acoustic wave resonator including:

a plurality of signal-side terminals having a

25 plurality of comb electrodes and connected to a midpoint between

the input signal electrode and the third surface acoustic wave resonator, a midpoint between the output signal electrode and the third surface acoustic wave resonator, and a midpoint between adjacent ones of the first surface acoustic wave
5 resonators, and

a ground-side common terminal having a plurality of comb electrodes to form interdigital transducers by the comb electrodes and the comb electrodes of the plurality of signal-side common terminals and connected to a grounding
10 electrode.

14. The surface acoustic wave device according to claim 1, wherein an electrode period of the first interdigital transducers of the first surface acoustic wave resonator is
15 different from an electrode period of the second interdigital transducers the first surface acoustic wave resonator.

15. The surface acoustic wave device according to claim 1, wherein an electrode period of the first interdigital transducers of the first surface acoustic wave resonator is
20 identical to an electrode period of the second interdigital transducers of the first surface acoustic wave resonator.

16. The surface acoustic wave device according to claim 1, wherein an electrode period of the plurality of interdigital

transducers forming the first surface acoustic wave resonator
is different from an electrode period of an interdigital
transducer forming the second surface acoustic wave resonator.

5 17. The surface acoustic wave device according to claim
5, wherein an electrode period of the first interdigital
transducers of the second surface acoustic wave resonator is
different from an electrode period of the second interdigital
transducers of the second surface acoustic wave resonator.

10

18. The surface acoustic wave device according to claim
5, wherein an electrode period of the first interdigital
transducers of the second surface acoustic wave resonator is
identical to an electrode period of the second interdigital
15 transducers of the second surface acoustic wave resonator.

19. The surface acoustic wave device according to claim
5, wherein an electrode period of the plurality of interdigital
transducers forming the first surface acoustic wave resonator
20 is different from an electrode period of an interdigital
transducer forming the second surface acoustic wave resonator.

20. The surface acoustic wave device according to claim
8, wherein an electrode period of the first interdigital
25 transducers of the second surface acoustic wave resonator is

different from an electrode period of the second interdigital transducers of the second surface acoustic wave resonator.

21. The surface acoustic wave device according to claim
5 8, wherein an electrode period of the first interdigital transducers of the second surface acoustic wave resonator is identical to an electrode period of the second interdigital transducers of the second surface acoustic wave resonator.

10 22. The surface acoustic wave device according to claim
8, wherein an electrode period of the plurality of interdigital transducers forming the first surface acoustic wave resonator is different from an electrode period of an interdigital transducer forming the second surface acoustic wave resonator.

15